Amendments to the Claims

1. (Previously presented) A process for copolymerizing polar and non-polar monomers, wherein at least one polar monomer is selected from the group consisting of chloroprene, styrene, acrylonitrile, vinyl chloride, acrylic acid, acrylate, cyanacrylate, methacrylic acid, methacrylate, acrylamide, methacrylonitrile, vinyl acetate, propene oxide, ethene oxide, vinyl carbazole, vinylpyrrolidone, vinyl ester, and compounds built up therefrom and at least one non-polar monomer is selected from the group consisting of olefin, diolefin and triene are polymerized in the presence of one or more transition metal compounds conforming structurally to ML_aQ_b wherein M is a metal selected from the group consisting of chromium, manganese, iron, colbalt, nickel, ruthenium, rhodium and palladium, L is a 2-, 3- or 4- dentate chelating ligand, Q is a mono-anionic or non-ionic ligand, b is an integer equal to or greater than 1 and a is a positive number calculated as the total number of receptor coordination sites on M –b) / the number of donor coordination sites on the ligand, one or more radical-producers and optionally one or more co-catalysts; and
the transition metal compound is chosen so that the transition metal compound, optionally in the presence of a co-catalyst, reversibly forms a complex with the radically growing polymer chain and the said non-polar monomers are inserted into the bond thus formed between transition metal and polymer chain.

2. (Cancelled)

3. (Previously Presented) A process according to Claim 1 characterized in that the radical-producer is chosen so that the radical-producer(s) initiate polymerization and do not react in a detrimental fashion with the transition metal compound.

4. (Previously Presented) A process for copolymerizing polar and non-polar monomers, wherein at least one polar monomer is selected from the group consisting

PAGE 3/16 * RCVD AT 11/29/2006 1:19:30 PM [Eastern Standard Time] * SVR:USPTO-EFXRF-2/5 * DNIS:2738300 * CSID:4128091054 * DURATION (mm-ss):04-28

of chloroprene, styrene, acrylonitrile, vinyl chloride, acrylic acid, acrylate, cyanacrylate, methacrylic acid, methacrylate, acrylamide, methacrylonitrile, vinyl acetate, propene oxide, ethene oxide, vinyl carbazole, vinylpyrrolidone, vinyl ester, and compounds built up therefrom and at least one non-polar monomer is selected from the group consisting of olefin, diolefin and triene are polymerized in the presence of one or more transition metal compounds conforming structurally to ML_aQ_b wherein M is a metal selected from the group consisting of chromium, manganese, iron, cobalt, nickel, ruthenium, rhodium and palladium, L is a 2-, 3- or 4- dentate chelating ligand, Q is a mono-anionic or non-ionic ligand, b is an integer equal to or greater than 1 and a is a positive number calculated as the total number of receptor coordination sites on M – b) / the number of donor coordination sites on the ligand, one or more radical-producers and optionally one or more co-catalysts; and

one or more transition metal complex cation forming compounds or coordination complex compounds are used as co-catalyst, chosen from the group of strong, neutral Lewis acids, ionic compounds with Lewis acid cations or Broenstedt acid cations and non-coordinating anions.

5. (Previously Presented) A composition for use in a process for copolymerizing polar and non-polar monomers, the composition containing one or more transition metal compounds conforming structurally to ML_aQ_b wherein M is a metal selected from the group consisting of chromium, manganese, iron, cobalt, nickel, ruthenium, rhodium and palladium, L is a 2-, 3- or 4-dentate chelating ligand, Q is a mono-anionic or non-ionic ligand, b is an integer equal to or greater than 1 and a is a positive number calculated as the total number of receptor coordination sites on M – b) / the number of donor coordination sites on the ligand, one or more radical-producers and optionally one or more co-catalysts; and

one or more compounds chosen from the group of strong, neutral Lewis acids, ionic compounds with Lewis acid cations or Broenstedt acid cations and non-coordinating anions are used as co-catalysts.

PAGE 4/16 * RCVD AT 11/29/2006 1:19:30 PM [Eastern Standard Time] * SVR:USPTO-EFXRF-2/5 * DNIS:2738300 * CSID:4128091054 * DURATION (mm-ss):04-28

6. (Cancelled)

7. (Previously Presented) A composition according to Claim 5 characterized in that the radical-producer is a peroxide, a diazo compound or a mixture thereof.

8. (Cancelled)

9. (Previously Presented) A composition for use in a process for copolymerizing polar and non-polar monomers, the composition containing one or more transition metal compounds conforming structurally to ML_aQ_b wherein M is a metal selected from the group consisting of chromium, manganese, iron, cobalt, nickel, ruthenium, rhodium and palladium, L is a 2-, 3- or 4-dentate chelating ligand, Q is a mono-anionic or non-ionic ligand, b is an integer equal to or greater than 1 and a is a positive number calculated as the total number of receptor coordination sites on M – b) / the number of donor coordination sites on the ligand, one or more radical-producers and optionally one or more co-catalyst; and
wherein the transition metal compound is chosen so that the transition metal compound, optionally in the presence of a co-catalyst, can reversibly form a complex with a radically growing polymer chain and non-polar monomers selected from the group consisting of olefin, diolefin and triene can be inserted into the bond formed in this way between transition metal and polymer chain.

10. (Previously Presented) A method of using the composition according to Claim 5 comprising catalyzing the copolymerization of monomers.

11. (Previously Presented) Copolymers which have a statistical distribution on the molecular level prepared in a process according to Claim 1.

PAGE 5/16 * RCVD AT 11/29/2006 1:19:30 PM [Eastern Standard Time] * SVR:USPTO-EFXRF-2/5 * DNIS:2738300 * CSID:4128091054 * DURATION (mm-ss):04-28

12.-15. (Cancelled)

16. (Previously Presented) A composition for use in a process for copolymerizing polar and non-polar monomers, the composition containing one or more transition metal compounds conforming structurally to ML_aQ_b wherein M is a metal selected from the group consisting of chromium, manganese, iron, cobalt, nickel, ruthenium, rhodium and palladium, L is a 2-, 3- or 4-dentate chelating ligand, Q is a mono-anionic or non-ionic ligand, b is an integer equal to or greater than 1 and a is a positive number calculated as the total number of receptor coordination sites on M – b) / the number of donor coordination sites on the ligand and one or more radical-producers; and
at least one co-catalyst selected from the group consisting of strong Lewis acids, neutral Lewis acids, ionic compounds with Lewis acid cations, ionic compounds with Broenstedt acid cations, and non-coordinating anions.

17. (Cancelled)

18. (Cancelled)

19. (Previously Presented) The composition of Claim 16 wherein the radical-producer is at least one member selected from the group consisting of peroxide and a diazo compound.

20. (Cancelled)

PAGE 6/16 * RCVD AT 11/29/2006 1:19:30 PM [Eastern Standard Time] * SVR:USPTO-EFXRF-2/5 * DNIS:2738300 * CSID:4128091054 * DURATION (mm-ss):04-28

21. (Previously Presented) A method of using the copolymer of Claim 11 comprising preparing a molded article.

22.-23. (Cancelled)

PAGE 7/16 * RCVD AT 11/29/2006 1:19:30 PM [Eastern Standard Time] * SVR:USPTO-EFXRF-2/5 * DNIS:2738300 * CSID:4128091054 * DURATION (mm-ss):04-28